Probing the ISM of Starburst Nuclei with Airborne FIR Spectroscopy

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ABSTRACT

In our KAO survey of 23 infrared galaxies, we detected one or more of these fine-structure lines in each galaxy: [SIII] 19,33 urn, [NeV] 24, [OIV] 25, [FeII] 26, [SiII] 35, [OIII] 52,88, [01] 63, 145 urn, [NIII] 57, [NiI] 122,205, [CII] 158. With photodissociation region and ionized region models we obtain the typical interstellar UV fields, and total masses, densities, and temperatures of tile warm atomic gas as well as the electron densities and pressures within ionized regions. We esimate T(eff) of the ionizing stars and typical gas phase elemental abundances. Low-metallicity systems show high CII/CO and 01/CO flux ratios, 3--5 times the Milky Way value, with a larger fraction of photodissociated gas.
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